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| EXAMINER BUCKLEY, AUDREA | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/589,210

Applicant(s)

JONES ET AL.

Examiner

AUDREA J. BUCKLEY

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-34, 37 and 42-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-34, 37 and 42-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date 12/8/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of the Claims

Acknowledgement is made of Applicants' claim amendments, new claims, and remarks/ arguments filed 12/08/2009.

Claims 1-29, 35, 36, and 38-41 are now canceled.

Claims 30-34, 37, and 42-48 are now pending.

Priority

This application is a 371 of PCT/GB05/00640, filed 2/21/2005. This application claims foreign priority to UK 0403773.5, filed 2/20/2004.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 12/08/2009 was filed after the mailing date of the application on 8/11/2006. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Oath/Declaration

The revised Declaration filed 12/08/2009 is acknowledged and overcomes the record objection to the defective oath/declaration.

Withdrawn Claim Rejections

The rejection of claims 29 and 36-40 under 35 U.S.C. 112, second paragraph, as being indefinite is withdrawn in light of Applicants' cancellation of these claims as filed 12/08/2009.

The rejection of claims 29-31, 35, 38, and 40-41 under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1) is withdrawn in light of Applicants' cancellation of these claims as filed 12/08/2009.

The rejection of claim 39 under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1) in view of Guritza (US 6,555,228 B2) is withdrawn in light of Applicants' cancellation of this claim as filed 12/08/2009.

The rejection of claims 32 and 33 under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1) in view of Zakikhai (EP 0451664 A1) and CRC Handbook of Food Additives is withdrawn in light of Applicants' cancellation of these claims as filed 12/08/2009.

The rejection of claims 34 and 43 under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1) in view of Fidoe et al. (WO 99/17614) is withdrawn in light of Applicants' cancellation of these claims as filed 12/08/2009.

The rejection of claims 36 and 37 under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1) in view of Heath et al. (US 7,196,040 B2) and Kung et al. (US 2003/0207270 A1) is withdrawn in light of Applicants' cancellation of these claims as filed 12/08/2009.

New Grounds of Rejection as Necessitated by Amendments

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 44 recites an "effective amount" of a phosphonium compound. This quantity is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, it is unclear to both the skilled artisan as to what would infringe the rejected claims (e.g., see 103 rejections). Further, it is unclear to the Examiner how this language further defines the presence of the recited phosphonium compound.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 30, 31, 34, 37, 42, and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1, published Mar. 1987) in view of Heath et al. (US 7,196,040 B2) and Kung et al. (US 2003/0207270 A1) as evidenced by PEG-8000 MSDS.

Regarding claim 44, Cooper et al. teach biocidal mixtures comprising tris hydroxymethyl organophosphine or tetrakis hydroxymehtyl phosphonium biocides and a surfactant, where the compositions claimed are useful for

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controlling micro-organisms in various industrial applications (see column 1, lines 1-3 and column 1, lines 14-18, in particular). Further regarding claim 42, Cooper et al. teach compositions comprising biocides, scale inhibitors, oxygen scavengers, etc. (see column 6, line 52) which are used to treat industrial water systems, for example (see column 18, claim 13, line 14; column 18, claim 16, line 26; column 18, claim 11, line 5), through contact (column 10, line 3) treating microorganisms including bacteria fungi, yeasts, and algae (see column 7, lines 18-20). More specifically and regarding claim 30, Cooper et al. claim tetrakis(hydroxymethyl) phosphonium sulphate (column 17, claim 3, line 21) and disclose polyhydric alcohols or ketones as solvents facilitating homogenous dispersal (see column 7, line 8). As to claim 31, cooper et al. claim tetrakis(hydroxymethyl) phosphonium phosphate (see column 17, claim 3, line 22).

As to claim 44, Cooper et al. does not teach the instantly recited matrix substrate.

However, Heath et al. disclose polymeric material for the release of chemicals in a fluid environment, where the polymeric material forms a matrix from which the chemical is released. Chemicals for release expressly include scale inhibitors and/or biocides. Example 3 disclosed by Heath et al. specifies tetrakis hydroxymethyl phosphonium sulfate as a biocidal chemical released from a PP/HDPE polymer matrix. Further, the compositions disclosed are used to treat industrial fluid systems such as oil field wells.

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Heath et al. does not teach polyethylene glycol having a molecular weight above 600 as a matrix substrate.

However and further regarding claim 37, it would have been obvious to the skilled artisan to try high molecular weight polyethylene glycol in view of the teaching of Kung et al. Kung et al. teach a genomic-based approach to herbal compositions wherein PEG-8000 is utilized as an inactive component serving as a substrate for stabilization of active components (see page 37, column 1, line 3). As to claims 34 and 44-46, it is noted as evidenced by the PEG 8000 MSDS that polyethylene glycol 8000 inherently has a molecular weight of 8000 g/mol, a melting point of 63° C, and solubility in cold or hot water, characteristics required by the instant claim.

Where a particular matrix example is not disclosed where the melting point is 60 C as in instant claim 46, it would have been obvious in view of the characteristics of PEG 8000 as set forth above to have chosen a matrix having similar characteristics. Therefore, a similar matrix having a melting point of 60° C would have been obvious over the PEG-8000 matrix having a characteristic melting point of 63° C.

Therefore it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to employ the PEG-8000 as taught by Kung et al. for the matrix such as those taught by Heath et al. for the release of a formulation as in Cooper et al. The skilled artisan would have been motivated to use matrixes such as those taught in Kung et al. and Heath et al. since these analogous disclosures previously had demonstrated success pertaining to the

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retention and release of a biocidal chemical (i.e., such as tetrakis hydroxymethyl phosphonium sulfate as in Heath et al.).

Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1, published Mar. 1987) in view of Heath et al. (US 7,196,040 B2) and Kung et al. (US 2003/0207270 A1) as evidenced by PEG-8000 MSDS as applied to claims 30, 31, 34, 37, 42, and 44-48 above, and further in view of Zakikhani (EP 0451664 A1).

The teachings of Cooper, Heath, and Kung et al. are delineated above.

None of these references teach the phosphonium compound being the condensate of THP with a nitrogen containing compound selected from urea, melamine, guanidine, and dicyandiamide.

However, Zakikhani teaches a fabric treatment composition which implements tetrakis (hydroxymethyl) phosphonium (THP) compounds or precondensates thereof with urea prior to the delivery of the active agent from the formulation solution. Specifically tetrakis(hydroxymethyl) phosphonium compounds or precondensates thereof are added to a nitrogen compound which preferably is one with at least two NH groups (such as 2-4) but advantageously contains two NH or especially two NH₂ groups. Examples of suitable nitrogen compounds are biuret, guanidine, melamine, and methylolated melamines, but urea is the preferred species. The nitrogen compound is preferably urea whenever it is present in the precondensate (see page 4, line 21).

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to implement the urea or melamine nitrogen compounds with the THP precondensate as taught by Zakikhani in the formulations of Cooper et al. One would have been motivated to do so in order to achieve the known stability associated with Zakikhani's successful impregnation of the phosphonium compound with an organic nitrogen compound, especially since Zakikhani teach that the THP uptake by a given substrate is improved based on the added nitrogen containing polymer, which is associated with less waste of the phosphorus active agent (see page 5, lines 30-38).

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper et al. (EP 0215562 A1, published Mar. 1987) in view of Heath et al. (US 7,196,040 B2) and Kung et al. (US 2003/0207270 A1) as evidenced by PEG-8000 MSDS as applied to claims 30, 31, 34, 37, 42, and 44-48 above, and further in view of Fidoe et al. (WO 99/17614).

The teachings of Cooper, Heath, and Kung et al. are delineated above.

None of these references teach the solid forms as in pending claim 43.

However, Fidoe et al. disclose solid compositions comprising tris hydroxymethyl organophosphine or tetrakis hydroxymethyl phosphonium biocides. Further, the resulting compositions are compacted into various shapes and used, under optional addition of further active ingredients, for the treatment of industrial water systems (see page 4, paragraph 6). The various shapes of granular and tableted form as taught by Fidoe et al. render obvious the instantly

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claimed shapes of sticks/ candles, beads, pellets, bricks, shavings, flakes or prills.

It would have been prima facie obvious for one of ordinary skill in the art at the time the invention was made to use shaped formulations as taught by Fidoe et al. by contacting them with an industrial system as also taught by Fidoe et al. in order to reduce the number of microorganisms since all these formulations implement analogous THP biocide active agents. The skilled artisan would have been motivated to do so in order to improve the ease of storage and application of the active agent as in the shapes taught by Fidoe et al.

Response to Arguments

Applicants' arguments presented 12/8/2009 have been fully considered but are moot in light of amendment. As noted above, all rejections previously presented are not re-iterated herein and are withdrawn. Applicants' positions against cited references are summarized and responded to as follows.

Regarding the rejection of claims 29-31, 35, 38, and 40-42, Applicant acknowledges that the rejection based on Cooper is moot as the claims have been amended. Applicant further states that there is no guidance provided by Cooper as to how to select a matrix substrate and how such an embedded product would be surprisingly advantageous over a liquid product. Applicants further state that there is vast improvement of the antimicrobial performance in the presence of an oxygen scavenger and that this advantage could not have been predicted from Cooper's disclosure.

In response, Applicant's position has been fully considered but is moot in light of amendments. See new grounds of rejection as necessitated by amendments as outlined above in the obviousness rejection.

Regarding the rejection of claim 39, Applicant acknowledges that this claim has been cancelled and that no counterpart in the claims now exists. Therefore, this rejection is rendered moot.

Regarding the rejection of claims 32 and 33, Applicants assert that the rejection cannot be maintained against the amended claims, however no rationale is given. However, the rejection is withdrawn as now depending on canceled claim 29.

Regarding the rejection of claims 34 and 43, Applicants point out that the rejection is not based on Cooper alone. Applicants further assert that the rejection cannot be maintained because the basic rejection based on Cooper cannot be maintained. Further still, Applicants' re-iterate that the newly amended claims are drawn to a method. Applicants finally state that Fidoe's process is only a spraying process, but this is not so because Fidoe explicitly teaches that the THP can be absorbed into the substrate (see page 1, paragraph 5). As such, the rejection is rendered moot in light of the amendments and is hereby withdrawn.

Regarding the rejection of claims 36 and 37, Applicants state that none of the products of Heath utilize a phosphonium compound embedded into applicants' particular matrix and further assert that Kung is non-analogous art. In response, it is noted that the rejection has been withdrawn as depending on a

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canceled claim. However, Applicants' attention is directed to the 103 obviousness rejection and the rationale for combining Cooper and Heath as articulated above. As to the relevance of Kung, the relevance of this reference is maintained since the particular substrate/solution/matrix is the same and is utilized for its release of an active agent. Further, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *in re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In the instant case, both references are directed to the release of an active agent from a matrix or solution which does not react with the active agent.

Applicant further states on page 11 of the reply that Kraus is non-analogous art, however it is noted that no citation for a reference having Kraus as an inventor has been given.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory

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period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AUDREA J. BUCKLEY whose telephone number is (571)270-1336. The examiner can normally be reached on Monday-Thursdays 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sharmila Landau can be reached on (571) 272-0614. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AJB/

/Sharmila Gollamudi Landau/
Supervisory Patent Examiner, Art Unit 1611